Small Business Innovation Research/Small Business Tech Transfer

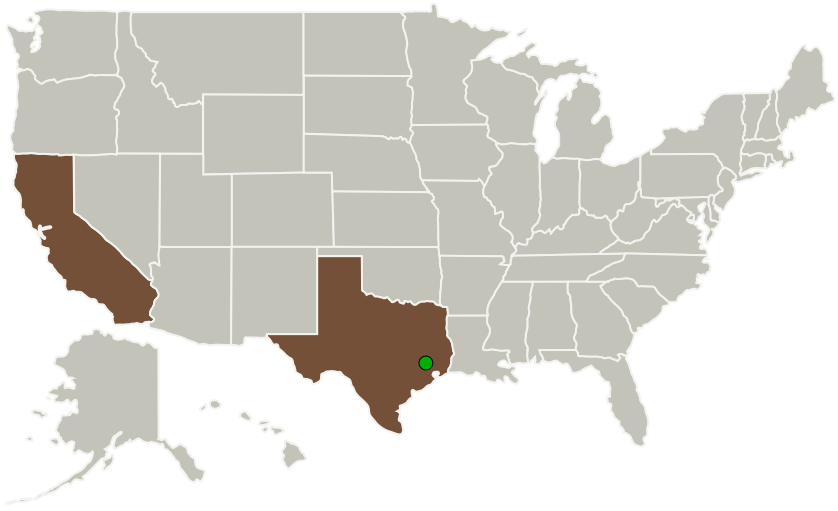
Compact Wireless EVA Communications System (CWECS), Phase II

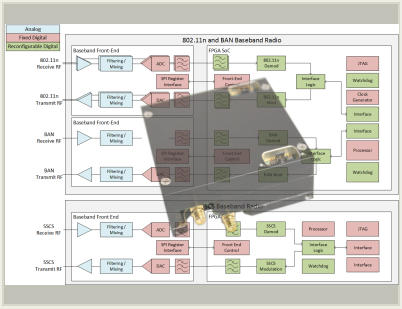
Completed Technology Project (2016 - 2020)

Project Introduction

Extravehicular Activity (EVA) systems are critical to every foreseeable human exploration mission for in-space microgravity EVA and for planetary surface exploration. Innoflight proposes developing a Compact Wireless EVA Communications System (CWECS) as a replacement and advancement of the Space-to-Space EVA Mobility Unit (EMU) Radio (SSER). The CWECS goals are to: (a) provide backward-compatibility with the existing SSCS network and SSER; (b) provide enhanced communication between the EMU and space vehicle (or ISS or future space habitat) via 802.11n, including high-speed telemetry from the EMU to the spacecraft; and (c) provide body area network (BAN) coverage for wireless biomedical devices and sensors within the EMU. The Phase II will leverage Innoflight's DeSCReeT IF-SDR architecture, which uses cutting edge radiation-tolerant components as the foundation of a software-defined radio (SDR), and transform it into an integrated unit supporting SSCS, 802.11n and BAN. The end result of the Phase II will be a brass-board CWECS that demonstrates compatibility with the selected waveforms.

Primary U.S. Work Locations and Key Partners





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Completed Technology Project (2016 - 2020)

Organizations Performing Work	Role	Type	Location
Innoflight, Inc.	Lead Organization	Industry Veteran-Owned Small Business (VOSB)	San Diego, California
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
California	Texas

Project Transitions

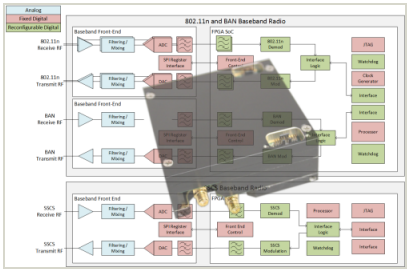
May 2016: Project Start

May 2020: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139724)*

Images



Briefing Chart Image
Compact Wireless EVA Communications System (CWECS), Phase II
(https://techport.nasa.gov/image/136154)

Final Summary Chart Image
Compact Wireless EVA Communications System (CWECS), Phase II
(https://techport.nasa.gov/image/134723)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Innoflight, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Joseph Koeniger

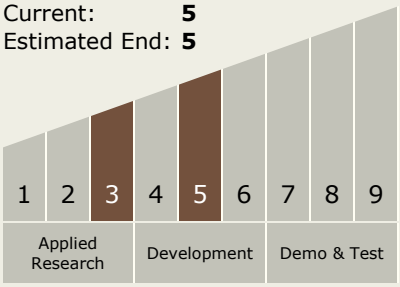
Co-Investigator:
Joe Koeniger

Compact Wireless EVA Communications System (CWECS), Phase II

Completed Technology Project (2016 - 2020)

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System